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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/882,100   | 06/15/2001  | Arthur J. Carlson    | 13148US02           | 7713             |
| 23446  | 7590        | 02/23/2005           | EXAMINER            |                  |
| MCANDREWS HELD & MALLOY, LTD<br>500 WEST MADISON STREET<br>SUITE 3400<br>CHICAGO, IL 60661 |             |                      | PERILLA, JASON M    |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2634                |                  |

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/882,100

Applicant(s) **K**

CARLSON, ARTHUR J.

Examiner

Jason M Perilla

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 June 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/20/03</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. Claims 1-20 are pending in the instant application.

***Claim Objections***

2. Claims 1-12 are objected to because of the following informalities:

Regarding claim 1, in line 3, "the data rate" should be replaced by --a data rate--.

Regarding claim 7, in line 3, "the data rate" should be replaced by --a data rate--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable by Bremer et al (US 6546090; hereafter "Bremer") in view of Dirschedl et al (US 6262994; hereafter "Dirschedl").

Regarding claim 1, Bremer discloses an ADSL system (abstract; col. 6, lines 45-55) for the transmission of high bit rate data services. Bremer does not disclose a method of restricting symbol size in an ADSL system. However, Dirschedl teaches a method of restricting symbol size in a system (abstract; col. 1, lines 40-55) comprising: obtaining information regarding the data rate during initialization (col. 2, line 63 – col. 3, line 9); comparing the information to a threshold (col. 3, lines 13-25); transmitting symbols using one of a multiple of 8, 4 or 2 bits per symbol if the information is above

the threshold (col. 2, line 45); and transmitting symbols using an integer number of bits per symbol if the information is below the threshold (col. 2, line 45). Dirschedl teaches a method wherein data is gathered at the side of a receiver regarding the current bit per symbol error rate (col. 2, lines 63-68) and the data is transmitted to a transmitter of the data. A success/fail determination or threshold is compared at the transmitter to determine the quality of the transmission (col. 3, lines 13-25). According to the success/fail determination, the number of bits per symbol is updated according to the possible bit rates of 2, 4, or 8 bits per symbol at the transmitter. As broadly as claimed, all of the possible bit rates disclosed by Dirschedl (col. 2, line 45) are both a multiple of 2 and an integer. Therefore, regardless of the decision based upon the threshold, either of the bit per symbol conditions (multiple of 2 or integer number) will be met. The method taught by Dirschedl is advantageous because it can be used to provide the maximum possible bit rate according to the capacity of the communications channel. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to modify the ADSL system of Bremer with the restricting symbol size method of Dirschedl because it can be used to provide the maximum possible bit rate according to the capacity of the communications channel.

Regarding claim 2, Bremer in view of Dirschedl disclose the limitations of claim 1 as applied above. Further, Dirschedl discloses that the information is obtained from a remote location. That is, the information regarding the data rate or determination of the error rate (col. 2, lines 63-68) is formed at the receiver and transmitted to the transmitter

(col. 2, line 66). Therefore the transmitter obtains the information from a remote location or from the receiver.

Regarding claim 3, Bremer in view of Dirschedl discloses the limitations of claim 1 as applied above. Further, Dirschedl discloses that the information regarding the data rate comprises an estimated maximum receive data rate. The information regarding the data rate received from the receiver (see application of claim 2 above) estimates a maximum receive data rate when taken in combination with the threshold or preset value because the threshold determines if the data rate is at a maximum (col. 3, lines 13-25).

Regarding claim 4, Bremer in view of Dirschedl disclose the limitations of claim 1 as applied above. Dirschedl discloses using a threshold or testing against a preset value to compare the information regarding the data rate (col. 3, lines 12-25). Dirschedl discloses the use of 2, 4, or 8 bits per symbol (col. 2, line 45) dependent upon the outcome of the threshold comparison and, depending upon the quality of the radio channel, bit rates from 900bits per second to 5400 bits per second (col. 3, lines 25-30). Bremer in view of Dirschedl do not disclose expressly that the threshold is 1Mbits per second or 250Kbits per second and transmitting symbols using a multiple of 8 bits per symbol if the information is above the threshold. However, at the time the invention was made, it would have been obvious to a person having ordinary skill in the art to utilize any one of a various number of thresholds and corresponding bit per symbol rates determined empirically. The Applicant has not disclosed that the particular claimed thresholds or corresponding bit per symbol rate provide an advantage, are used for a

particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with any of a various number of threshold levels and corresponding bit per symbol rates derived empirically because each transmission system may need to be tuned according to the capacity of the communications channel and the desired data rate of the system. Therefore, it would have been obvious to one of ordinary skill in this art to modify Bremer in view of Dirschedl to obtain the invention as specified in the claim.

Regarding claim 5, Bremer in view of Dirschedl disclose the limitation of claim 1 above. Further, the additional limitations of claim 5 are disclosed by Bremer in view of Dirschedl as applied to claim 4 above. Here, the use of a threshold of 2Mbits per second or 500Kbits per second and transmitting using a multiple of 4 bits per symbol if the information is above the threshold is considered a matter of design choice as applied to claim 4 above.

Regarding claim 6, Bremer in view of Dirschedl disclose the limitation of claim 1 above. Further, the additional limitations of claim 6 are disclosed by Bremer in view of Dirschedl as applied to claim 4 above. Here, the use of a threshold of 3Mbits per second or 750Kbits per second and transmitting using a multiple of 2 bits per symbol if the information is above the threshold is considered a matter of design choice as applied to claim 4 above.

Regarding claims 7-12, Bremer in view of Dirschedl disclose the limitations of the claims as applied to claims 1-6, respectively, above.

Regarding claim 13, Bremer discloses an ADSL system (abstract; col. 6, lines 45-55) for the transmission of high bit rate data services. Bremer discloses a first modem (fig. 2, ref. 40) and a second modem (fig. 2, ref. 20) which each have a receiver and a transmitter as known by one having skill in the art (MODulate/DEMODulate). Bremer does not disclose that the two modems achieve a maximum data rate between them. However, Dirschedl teaches a system wherein a transmitter and a receiver achieve a maximum data rate between them. Dirschedl teaches a transmitter which estimates a maximum receive data rate of a receiver and compares it to a threshold (col. 2, line 60 – col. 3, line 25) to select a number of bits per symbol based upon the comparison. In the teachings of Dirschedl, the transmitter of is analogous to the second modem of Bremer and the receiver is analogous to the first modem of Bremer. Dirschedl teaches a method wherein data is gathered at the side of a receiver (first modem) regarding the current bit per symbol error rate (col. 2, lines 63-68) and the data is transmitted to a transmitter (second modem) of the data. A success/fail determination or threshold is compared at the transmitter (second modem) to determine the quality of the transmission (col. 3, lines 13-25). According to the success/fail determination, the number of bits per symbol is updated according to the possible bit rates of 2, 4, or 8 bits per symbol at the transmitter. It is at least implied that, once a new bit per symbol rate is determined by the transmitter, the receiver of Dirschedl is instructed to communicate using the selected number of bits per symbol for the utility of the communications pair. The method taught by Dirschedl is advantageous because it can be used to provide the maximum possible bit rate according to the capacity of the communications channel.

Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to modify the ADSL system of Bremer with the restricting symbol size method of Dirschedl because it can be used to provide the maximum possible bit rate according to the capacity of the communications channel.

Regarding claim 14, Bremer in view of Dirschedl disclose the limitations of claim 13 as applied above. Further, Dirschedl discloses that the pre-selected number of bits per symbol based upon the comparison is one of 2, 4, or 8 bits per symbol (col. 2, line 45). Every one of 2, 4, and 8 is at least a multiple of 1.

Regarding claim 15, Bremer in view of Dirschedl disclose the limitations of claim 14 as applied above. Dirschedl discloses using a threshold or testing against a preset value to compare the information regarding the data rate (col. 3, lines 12-25). Dirschedl discloses the use of 2, 4, or 8 bits per symbol (col. 2, line 45) dependent upon the outcome of the threshold comparison and, depending upon the quality of the radio channel, bit rates from 900bits per second to 5400 bits per second (col. 3, lines 25-30). Bremer in view of Dirschedl do not disclose expressly that the threshold is 1Mbits per second or 250Kbits per second and transmitting symbols using a multiple of 8 bits per symbol if the information is above the threshold. However, at the time the invention was made, it would have been obvious to a person having ordinary skill in the art to utilize any one of a various number of thresholds and corresponding bit per symbol rates determined empirically. The Applicant has not disclosed that the particular claimed thresholds or corresponding bit per symbol rate provide an advantage, are used for a particular purpose, or solves a stated problem. One of ordinary skill in the art,



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furthermore, would have expected Applicant's invention to perform equally well with any of a various number of threshold levels and corresponding bit per symbol rates derived empirically because each transmission system may need to be tuned according to the capacity of the communications channel and the desired data rate of the system.

Therefore, it would have been obvious to one of ordinary skill in this art to modify Bremer in view of Dirschedl to obtain the invention as specified in the claim.

Regarding claim 16, Bremer in view of Dirschedl disclose the limitation of claim 14 above. Further, the additional limitations of claim 16 are disclosed by Bremer in view of Dirschedl as applied to claim 15 above. Here, the use of a threshold of 2Mbits per second or 500Kbits per second and transmitting using a multiple of 4 bits per symbol if the information is above the threshold is considered a matter of design choice as applied to claim 4 above.

Regarding claim 17, Bremer in view of Dirschedl disclose the limitation of claim 14 above. Further, the additional limitations of claim 17 are disclosed by Bremer in view of Dirschedl as applied to claim 15 above. Here, the use of a threshold of 3Mbits per second or 750Kbits per second and transmitting using a multiple of 2 bits per symbol if the information is above the threshold is considered a matter of design choice as applied to claim 4 above.

Regarding claim 18, Bremer in view of Dirschedl disclose the limitations of claim 14 as applied above. Further, Dirschedl discloses that the transmissions errors are recorded using the CRC code (col. 2, lines 59-63) and send to the transmitter (col. 2,

lines 65-68). As broadly as claimed, the number of transmission errors send by the receiver to the transmitter is considered to be a training signal.

Regarding claim 19, Bremer in view of Dirschedl disclose the limitations of claim 14 as applied above. Further, Dirschedl discloses that the error rate transmitted from the receiver is compared with the threshold (col. 3, lines 13-25). The error rate received from the receiver is considered to be an estimate of the maximum receive data rate of the receiver because it describes if the receiver is receiving too much or possibly too little data. The error rate, or estimated maximum receive data rate, is compared with the threshold.

Regarding claim 20, Bremer in view of Dirschedl disclose the limitations of claim 14 as applied above. Further, it is implied in the system of Bremer in view of Dirschedl by the teachings of Dirschedl that the first modem will adjust the data rate of the transmitter according to the threshold comparison of the second modem. One skilled in the art understands that both a receiver and a transmitter must be using the same data rate and bit per symbol rate for the utility of the data communications. Further, it is implied that a manager or system hardware would effect the use of the correct number of bits per symbol.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art not relied upon above is cited to further show the state of the art with respect to adaptive bit rate transmission.

U.S. Pat. No. 6389065 to McGhee.

U.S. Pat. No. 6310909 to Jones.

U.S. Pat. No. 6487244 to Betts.

U.S. Pat. No. 6498808 to Tzannes.

U.S. Pat. No. 6532267 to Heegard.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jason M. Perilla  
February 2, 2005

jmp



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